Listing of Claims

This listing replaces all prior versions, and listings, of claims in the application:

1. (withdrawn): A stable alcohol-in-fluorocarbon microemulsion composition comprising:

an alcohol dispersed phase,

a fluorocarbon continuous phase,

a molecule of interest dissolved or dispersed in alcohol,

a film-forming substance dissolved or dispersed in the alcohol,

a surfactant or co-surfactant or a mixture thereof, and

a cell-targeting ligand.

2. (withdrawn): The microemulsion according to claim 1, wherein the molecule of interest is a drug molecule, a food, a magnet, or a sensor molecule.

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3. (withdrawn): The microemulsion according to claim 1, wherein said fluorocarbon is perflubron.

4. (withdrawn): The microemulsion according to claim 1, wherein said film-forming substance is ethyl cellulose.

5. (withdrawn): The microemulsion according to claim 1, wherein said surfactant is a fluorosurfactant.

6. (withdrawn): The microemulsion according to claim 1, wherein said alcohol is ethanol.

7. (withdrawn): The microemulsion according to claim 2, wherein said drug molecule is plasmid DNA, oligonucleotide, peptide, protein, antibody, small drug molecule, or a rare-earth molecule.

8. (withdrawn): The microemulsion according to claim 2, where said sensor molecule responds in a controlled and predictable manner to changes in temperature, pH, pressure, or the presence of another substance.

9. (withdrawn): The microemulsion according to claim 1, wherein said cell-targeting ligand is asialofetuin, mannan, mannose, folate, a saccharide, or an antibody.

10. (withdrawn): The microemulsion according to claim 1, wherein said alcohol is removed from the microemulsion by evaporation or by dilution with a suitable solvent to cause the film-forming substance to precipitate into solid nanoparticles having a diameter less than about 300 nanometers.

11. (withdrawn): A method for purifying or characterizing a solid nanoparticle comprising removing alcohol from the microemulsion according to claim 1 by evaporating or diluting with a suitable solvent thereby curing the nanoparticle in a continuous phase, and subjecting the cured nanoparticle to gel permeation or ultracentrifugation, and obtaining a solid nanoparticle.

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12. (withdrawn): A stable liquid hydrocarbon-in-fluorocarbon microemulsion prepared at a temperature of between about 35-100°C and having a composition comprising:

a liquid hydrocarbon dispersed phase,

a fluorocarbon continuous phase,

a molecule of interest dissolved or dispersed in the liquid hydrocarbon,

a surfactant or co-surfactant or a mixture thereof, and

a cell-targeting ligand.

13. (withdrawn): The microemulsion according to claim 12, wherein said fluorocarbon is perflubron.

14. (withdrawn): The microemulsion according to claim 12, wherein said liquid hydrocarbon is a solid at about 25°C, has a melting point of between about 35-100°C, is water-insoluble, and is amphipathic having both hydrophobic and hydrophilic moieties.

15. (withdrawn): The microemulsion according to claim 12, wherein said surfactant is a fluorosurfactant.

16. (withdrawn): The microemulsion according to claim 12, wherein said molecule of interest is a drug molecule.

17. (withdrawn): The microemulsion according to claim 12, where said molecule of interest is a sensor molecule that responds in a controlled and predictable manner to changes in temperature, pH, pressure, or the presence of another substance.

18. (withdrawn): The microemulsion according to claim 12, wherein said cell-targeting ligand is asialofetuin, mannan, mannose, folate, a saccharide, or an antibody.

19. (withdrawn): The microemulsion according to claim 12, wherein the microemulsion is cooled to cause the hydrocarbon to solidify into solid nanoparticles having a diameter less than about 300 nanometers.

20. (withdrawn): A method for purifying or characterizing a solid nanoparticle, comprising cooling the microemulsion according to claim 12, wherein said hydrocarbon is solidified into solid nanoparticles containing said molecule of interest thereby curing said nanoparticle in a continuous phase, and subjecting the cured nanoparticle to gel permeation or ultracentrifugation, and obtaining a solid nanoparticle.

21. (currently amended) A method of making a nanoparticle, comprising:

making an oil-in-water microemulsion by heating, the microemulsion comprising:

~~at least one~~ a liquid nanoparticle matrix material,

~~at least one~~ a surfactant or co-surfactant or a mixture thereof, and

~~at least one~~ a molecule of interest; and ~~, wherein said nanoparticle is made from an oil-in-water microemulsion precursor.~~

cooling the microemulsion to form the nanoparticle, where the molecule of interest is either entrapped in or adsorbed to the nanoparticle.

22. (currently amended) The ~~nanoparticle~~ method according to claim 21, ~~wherein in said oil-in-water microemulsion precursor, an oil phase comprised of at least one nanoparticle matrix material and at least one molecule of interest is dispersed in an aqueous continuous phase to form a surfactant stabilized microemulsion between about 35°C and about 100°C,~~ wherein the ~~micromulsion~~ microemulsion is made by heating at a temperature of between about 35°C and about 100°C and is cooled to room temperature while stirring to form a nanoparticle having a diameter of less than about 300 nanometers ~~solid stable nanoparticles containing at least one molecule of interest either entrapped in or adsorbed to the nanoparticles having a diameter of less than about 300 nanometers~~.

23. (currently amended) The ~~nanoparticle~~ method according to claim 22, wherein the nanoparticle matrix material comprises one or more of the following materials: emulsifying wax, polyoxyethylene sorbitan fatty acid esters, polyoxyethylene alkyl ethers, polyoxyethylene stearates, phospholipids, fatty acids or fatty alcohols or their derivatives, or combinations thereof.

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24. (currently amended) The ~~nanoparticle~~ method according to claim 21, wherein the liquid nanoparticle matrix material is present in the microemulsion at a concentration from about 0.1 to about 30 mg/mL.

25. (currently amended) The ~~nanoparticle~~ method according to claim 22, wherein ~~said~~ the microemulsion comprises an oil phase that is present as liquid droplets having a diameter of less than about 100 nanometers.

26. (currently amended) The ~~nanoparticle~~ method according to claim 22, wherein the microemulsion comprises a ~~said~~ continuous phase ~~is~~ comprising water or an aqueous buffer ~~present~~ at a concentration of greater than about 95% w/w.

27. (currently amended) The ~~nanoparticle~~ method according to claim 21, wherein ~~said~~ the surfactant or co-surfactant ~~is~~ comprises polyoxyethylene alkyl ethers, polyoxyethylene sorbitan

fatty acid esters, polyoxyethylene stearates, hexadecyltrimethylammonium bromide, fatty alcohol and their derivatives, or combinations, thereof.

28. (currently amended) The ~~nanoparticle~~ method according to claim 21, wherein ~~said~~ the surfactant is present at a total concentration of about 1-5000 mM.

29. (currently amended) The ~~nanoparticle~~ method according to claim 21, wherein ~~said~~ the molecule of interest is present at a total concentration in the range of about 20 μg/mL to about 5 mg/mL.

30. (currently amended) The ~~nanoparticle~~ method according to claim 21, wherein ~~said~~ the molecule of interest ~~is~~ comprises a drug molecule, a food, a magnet, or a sensor molecule.

31. (currently amended) The ~~nanoparticle~~ method according to claim 21, wherein ~~said~~ the molecule of interest ~~is~~ comprises plasmid DNA.

32. (currently amended) The ~~nanoparticle~~ method according to claim 21, wherein ~~said~~ the molecule of interest ~~is~~ comprises Gadolinium, its derivatives or complexes thereof.

33. (currently amended) The ~~nanoparticle~~ method according to claim 21, wherein ~~said~~ the nanoparticle is coated with a cell-specific ligand such as an antibody, carbohydrate, peptide, protein, or derivatives or combinations thereof.